

A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Donna J Lee

Final Selection Panel Review #1

Proposal Title

#0253: A Systematic Approach to Choosing Scenarios to Evaluate Bay-Delta Management and Restoration Strategies

Funding:

Do not fund

The letter of support was very vague and does not add anything new to the proposal. If there were other letters of support from other agencies besides Resources, then the proposal may have been supported. Therefore, unless something were to change in a relevant sense, nothing has changed in the evaluation for this proposal.

Final Selection Panel Review #2

Proposal Title

#0253: A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Funding:

Do not fund

This proposal received one public comment from Jerry Johns, Deputy Director of DWR, expressing DWR's support for the work described in this proposal. It is identical to a letter of support included in the original proposal that was available to the external reviewers, Technical Synthesis Panel, and Selection Panel. There is no evidence that these reviewers neglected to consider the letter. Therefore, it does not add any new information or perspective to the review and evaluation of the proposal, and there appears to be no basis for changing the Selection Panel's recommendation.

Public Comments

The following public comments were received for this proposal.

DEPARTMENT OF WATER RESOURCES

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JAN 03 2005

CALIFORNIA BAY-DELTA
AUTHORITY

Dr. Johnnie Moore, Lead Scientist
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650 Capitol Mall, 5th Floor
Sacramento, CA 95814

Dr. Moore: Johnnie

The purpose of this letter is to express the California Department of Water Resources' (DWR) support for the RAND Corporation's funding proposal to the California Bay-Delta Authority Science Program. Funding of this proposal will enable RAND to further evaluate the use of robust decision making methods to improve regional and statewide water planning. This work has the potential to offer significant advances in dealing with uncertainty during future analyses performed for the California Water Plan.

DWR collaborated successfully with staff from the RAND Corporation during the development of the public review draft of *Water Plan Update 2004*, due out in early 2005. DWR and RAND developed a tool to evaluate three different year 2030 scenarios that describe the conditions that could be faced by water managers in the future. Each scenario used different values for demographic and land use factors that affect urban, agricultural, and environmental water uses. The result from this effort provided a new way of looking at certain aspects of uncertainties and variability surrounding water management in California that we hope to expand in the next *California Water Plan Update*.

We are actively working with RAND to define and conduct their study and are interested in seeing how robust decision making methods might be used in the scenario analysis for the *California Water Plan Update 2008*.

If you have any questions about DWR's role in this effort please contact Rich Juricich with DWR's Statewide Water Planning Branch at (916) 651-9225.

Sincerley,

Gerald E. Johns
Deputy Director

cc: Robert Lempert
RAND Corporation
1776 Main Street
Santa Monica, CA 90407-2138

Initial Selection Panel Review

Proposal Title

#0253: A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Funding:

Do not fund

Initial Selection Panel (Primary) Review

Topic Areas

- Implications Of Future Change On Regional Hydrology, Water Operations, And Environmental Processes
- Water Management Models For Prediction, Optimization, And Strategic Assessments

Please describe the relevance and strategic importance of this proposal in the context of this PSP. How does the proposal address the topic areas identified above? What are the broader CALFED Goals this proposal may meet that are not accounted for in these specific topic areas?

The proposed project is directly relevant to the a priority topic area in the PSP: performance assessment-improving tools and implications of future changes. In particular this project will focus thinking on the uncertainties associated with changes to a highly managed and complex system. If CALFED agencies became directly engaged in this effort, this project could also help the agencies understand the choices and trade-offs among different alternatives for complex projects like the South Delta Improvements Program.

The budgets of proposals submitted in response to this PSP are larger, on average, than those submitted to CALFED in previous years. The Science Program is committed to getting as much science per dollar as is reasonably possible. With this commitment in mind, can the proposed budget be streamlined? If so, please recommend and clearly justify a new budget total in the space provided.

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Initial Selection Panel Review

I don't see how the proposed budget can be streamlined. Most of the personnel involved are very senior staff at RAND, so the hourly rate for many of the people involved is relatively high. I am concerned about RAND's indirect rate = 94% of salaries and benefit. I do not support funding this proposal with an indirect rate of 94%.

Evaluation Summary And Rating.

Provide a brief explanation of your summary rating and any additional comments you feel are pertinent.

I believe the project proposed by RAND could be useful to CALFED in the near-term, particularly in deeper evaluation of the Delta Improvements Package. HOWEVER, I am very concerned that this project will not have support and commitment by all of the key CALFED agencies (DWR, USBR, FWS, NMFS, and DFG). DWR has provided a letter of support, but that letter really supports RAND's effort relative to the CA Water Plan. Further, I am concerned, as expressed by one of the technical reviewers, about the practicality of the outcomes given the complexity of the approach and the lack of transparency to the end-user. I also have concerns about the high indirect cost rate, the lack of specificity in the "internal quality control review" (task 5) of the final report, and who gets to use the model/applications when the project is finished. Before agreeing to fund this I would want RAND to directly contact senior managers at the five CALFED agencies to get there personal commitment of involvement in this project. I would also want an explicit understanding of how the agencies will use the results of this project in the complex CALFED decisions they face. In the absence these commitments and clarifications, I would only consider funding this at a very reduced level as a pilot or scoping project, or as a cost-share project with DWR.

Selection Panel (Discussion) Review

fund this amount: \$0

note:

do not fund

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Initial Selection Panel Review

The Panel agreed that this work is important, and has potential to generate useful information. This type of work needs to be done, but there is overlap with several other proposals. They have NSF funding already for nationwide water policy, and ongoing work with DWR. Additionally, project proponents need to show what the connection is to ecosystem processes, and demonstrate how they will couple this work to biological models, before CALFED will fund it.

Concerns include that indirect costs (94%) are high relative to rates at other nonprofit and academic institutions, although many high-level people will be involved. Also, in the scenario generation, it is not clear if the lower-level models can generate valid outcomes. The Panel felt it was not clear how this information would be applied to the work of managers and the decisions that need to be made. It is not clear that other CALFED agencies beyond DWR are on board to use this product.

The researchers would need to work more closely with CALFED than they indicate, and CALFED doesn't have a high-level task force to interface with these researchers. They are not as connected to the CALFED region ecosystems and water management as other teams proposing similar work.

Panel Ranking: Do Not Fund

Technical Synthesis Panel Review

Proposal Title

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Final Panel Rating
above average

Technical Synthesis Panel (Primary) Review

TSP Primary Reviewer's Evaluation Summary And Rating:

This is a proposal to utilize a sophisticated decision-support methodology (RAND's "robust decision method,") to generate a large scale simulation model to guide the management of the very complex Bay-Delta system. As noted by one of the reviewers, who offered a critical but favorable review of the project: "The conventional approach to development of simulation models and analysis currently employed by the CALFED agencies is computationally intensive and produces only a narrow range of possible scenarios. This results in bracketing the policy discussion among stakeholders as well as limiting the decision-makers in their deliberative process. In this proposal, RAND aims to develop and (partly test) a tool that not only accounts for a wide range of vulnerabilities and uncertainties, but produces huge numbers of scenarios. The process will result in the creation of scenarios that can..interpolate among and extrapolate beyond the results of "more detailed" models to systematically identify those scenarios most important to the choice among alternative policies." This reviewer and another one of the external reviewers note that is not made entirely clear to what extent the methods being proposed will actually work and to what extent this project is essentially experimental in nature. For example, the proposal states that "the proposed project will

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Technical Synthesis Panel Review

not conduct a full-scale stakeholder scenario-planning process in its entirety, but will mimic some of its key aspects." Another concern is that "the method will use the information contained in CALFED's large scale simulation models". This implies that the larger scale models are themselves capable of fully supporting decision-making at a complex level, which is not the case for biologically rich systems. How then will the success of this RDM modeling approach to be evaluated? It is clear that the Rand team has the capability to make advances in this area, and the project is after all a demonstration, which speaks to CALFED making an investment in the approach. The budget appears to be appropriate.

Additional Comments:

This is a proposal to utilize a sophisticated decision-support methodology (RAND's "robust decision method,") to generate a large scale simulation model to guide the management of the very complex Bay-Delta system. As noted by one of the reviewers, who offered a critical but favorable review of the project: "The conventional approach to development of simulation models and analysis currently employed by the CALFED agencies is computationally intensive and produces only a narrow range of possible scenarios. This results in bracketing the policy discussion among stakeholders as well as limiting the decision-makers in their deliberative process. In this proposal, RAND aims to develop and (partly test) a tool that not only accounts for a wide range of vulnerabilities and uncertainties, but produces huge numbers of scenarios. The process will result in the creation of scenarios that can..interpolate among and extrapolate beyond the results of "more detailed" models to systematically identify those scenarios most important to the choice among alternative policies." This reviewer and another one of the external reviewers note that is not made entirely clear to what extent the methods being proposed will actually work and to what extent this project is essentially experimental in nature. For example, the proposal states that "the proposed project will not conduct a full-scale stakeholder scenario-planning process in its entirety, but will mimic some of its key aspects."

Technical Synthesis Panel Review

Another concern is that "the method will use the information contained in CALFED's large scale simulation models". This implies that the larger scale models are themselves capable of fully supporting decision-making at a complex level, which is not the case for biologically rich systems. How then will the success of this RDM modeling approach to be evaluated? It is clear that the Rand team has the capability to make advances in this area, and the project is after all a demonstration, which speaks to CALFED making an investment in the approach. The budget appears to be appropriate.

Technical Synthesis Panel (Discussion) Review

TSP Observations, Findings And Recommendations:

This proposal advocates the use of RAND's decision-support methodology to generate and evaluate scenarios and restoration strategies in the Bay-Delta ecosystem. Two of the external reviewers were quite positive about this proposal. A third reviewer was much more critical of the proposal's approach to generating scenarios; according to this reviewer, the scenarios generated by this approach may not be any more useful than those generated by stakeholders through more conventional means. In addition, since managers are not used to working with the type of scenarios generated by this kind of tool, they may not maximize the value of the scenario results. However, the panel believed that continued development of this type of tool (as envisioned by this "demonstration" project) may reveal its value.

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proposal title: A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	The goals and objectives described in the proposal appear to address one priority area of the solicitation package (i.e., tool development) and are both time and important. One aspect not made entirely clear is to what extent the methods being proposed will actually work and to what extent this project is essentially experimental in nature. For example, "the proposed project will not conduct a full-scale stakeholder scenario-planning process in its entirety, but will mimic some of its key aspects." From this type of language, it is difficult to discern what is being proposed and and what they plan to deliver.
Rating	good

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full–scale implementation project justified?

Comments	The conceptual model is just that, conceptual. The proposal contains a high degree of abstract language that makes it difficult to fully comprehend. While there may be millions of possible scenarios, they probably readily reduce to a relatively
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Technical Review #1

	<p>small number and it's not clear why one needs to generate millions of scenarios for the sake of identifying a realistic subset. Moreover, planning is much more than strictly scientific or probabilistic, so it's not clear what is gained by substituting simulations for stakeholder opinions and judgments.</p> <p>Language in the proposal like "if successful" or "evaluating...the utility of these analytically-derived scenarios" suggests the model being proposed has not been field tested and may not achieve its desired objectives. The proposal does not make clear whether this is intended to be a pilot project or a full-scale project; the authors seem to be hedging their bets the way some of the proposal reads (see comments above). The exact scope of the project is hazy. With a price tag of more than a half million dollars, it seems like a rather high-priced gamble if it should fail.</p>
Rating	fair

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	<p>The model laid out is very complex and therefore may not transparent to users or consumers of products that might be produced. While new tools to address uncertainty and potential impacts of a wide variety of activities may be needed, proposing technology-intensive means of generating alternative futures and evaluating them ultimately requires a leap</p>
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	of faith by the end user. Something of a black box is being proposed, which I have a hard time believing will be of much utility to decision makers. Moreover, the proposal does not make clear if this is meant to be a one-time project or if the technology developed is to be turned over to decision makers for future generation and evaluation of scenarios. The approach is very top-down, with the proposal noting that results will be communicated to CALFED managers and stakeholders who will be only minimally consulted at the outset to identify leading scenarios and key uncertainties. None of the six initial meetings would involve the public.
Rating	fair

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	<p>The likelihood of success is uncertain because this type of project is novel. The proposal is confusing so it is difficult to evaluate its feasibility. And, it is not clear how success will be evaluated. The proposal calls for testing the hypothesis "that scenarios derived through an analytic process like RDM provide deeper insight than conventionally generated scenarios." Even if that were the case, it's not clear how that information would be incorporated by decision makers into future planning. The proposal doesn't seem to be grounded in the universe in which agency personnel operate. Deeper insights alone may not result in an improved planning process.</p> <p>Also, the proposal does not address how the activities of the different participants will be coordinated. When contributors are spread across different institutions, and even continents, coordination is no trivial matter.</p>
Rating	

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	fair
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Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	N/A
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	Products, aside from reports, are not clearly identified. It is difficult to project what practical outcomes may arise from the project, what next steps would be appropriate.
Rating	fair

Additional Comments

Comments

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The authors should be qualified to carry out the scope of work proposed and have access to the necessary resources.
Rating	excellent

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Budget

Is the budget reasonable and adequate for the work proposed?

Comments	It may be reasonable for the work proposed, but I have serious reservations about the project as a whole as described above.
Rating	good

Overall

Provide a brief explanation of your summary rating.

Comments	<p>The project proposes an interesting set of methodologies to examine uncertainties related to management of the Bay-Delta system. However, I have many reservations about the practicality of the project. Those reservations may be have reduced had the proposal been more clearly written (less jargon) and objectives and products more clearly described, with an emphasis on how these methods would result in better planning, not whether they would result in better planning.</p> <p>In terms of developing useful tools for decision makers, the proposal has not convinced me that those decision makers will be in a better position at the close of the project. It's highly complex nature means it will be difficult to explain to an end user, would not be transparent to the public, and thus would probably be of limited utility. I applaud the idea of developing comprehensive methods to address planning uncertainties, but the overemphasis on technological tools at the expense of stakeholder involvement will probably result in an unbalanced product.</p>
Rating	fair

Technical Review #2

proposal title: A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	Yes, the proposal is extremely well written. The goals, objectives, and hypotheses are clearly stated and consistent throughout. The proposed project will test the hypothesis that the application of RAND's "robust decision method," as a means of developing critical and unconventional forecast models to be applied to water resource planning/management, will provide CALFED managers with a valuable approach to decision-making in an environment fraught with uncertainty. The proposal to develop large-scale simulation models that chracterize these uncertainties could not be more timely given the highly charged water policy environment and the increasingly complex technical challenges that managers face.
Rating	excellent

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full–scale implementation project justified?

Comments	Yes. The proposal aims to develop a large scale simulation model, and a suite of scenarios, that will capture the range of uncertainties that affect the future of water
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Technical Review #2

resource planning and management. DWR has submitted a letter of support for this proposal as RAND has collaborated with DWR in the development of a tool to evaluate different year 2030 scenarios that described potential future conditions as part of the public review draft of the Water Plan Update 2004. DWR has an interest in further exploring the application of this tool for the 2008 Water Plan Update. In developing this proposal, the proponents consulted with CALFED staff and officials, and Science Board members, to assure relevancy to policy needs. The proposal includes descriptions of what are called "influence diagrams" for the water management "scenario generator" that will track the allocation rules, uncertainties, management options, policies, costs, etc. This diagram of how the generator modules interact is described in detail in the text, as is the relationship between this proposed tool and other frameworks, analytical tools, models and approaches currently used by CALFED agencies. The conventional approach to development of simulation models and analysis currently employed by the CALFED agencies is computationally intensive and produces only a narrow range of possible scenarios. This results in bracketing the policy discussion among stakeholders as well as limiting the decision-makers in their deliberative process. IN this proposal, RAND aims to develop a tool that not only accounts for a wide range of vulnerabilities and uncertainties, but produces huge numbers of scenarios. Such an exercise can only serve to educate stakeholders and expand the debate and dialogue, as well as provide a more comprehensive framework from which planning can occur. To my understanding, this is a demonstration project, because even though the

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	proposal is to develop the tool and the scenarios, and to evaluate and analyze them, the project proponent has no decision making authority to actually have water managers adopt and use the tool.
Rating	excellent

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	Yes. The approach described in the proposal includes building on work done by RAND in the past to develop and demonstrate an analytic approach to decision making that relies on the creation of scenarios that can "...interpolate among and extrapolate beyond the results of more detailed models to systematically identify those scenarios most important to the choice among alternative policies." The approach as described is appropriate for meeting the stated objective - to develop better analytic tools to inform CALFED agencies about the potential impacts of future changes in climate, hydrology, demographics, and other variables - that will assist managers in resource planning, meeting restoration goals, water management goals, water quality objectives, etc. If successful, and the tool can incorporate uncertainty in the tools currently employed by the agencies, and this new tool can produce a suite of scenarios (i.e., key Delta restoration and management scenarios) that can effectively represent and communicate how these uncertainties may affect future CALFED activities and programs, and the tool helps CALFED decisionmakers and stakeholders improve water resource decisionmaking for the short and longterm, then the project will have generated new information, methodologies, and approaches to tackling water management problems.
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Technical Review #2

	<p>Outcomes of interest can be ranked according to one or more measures or actions that are particularly relevant to the policy decisions of greatest import.</p> <p>If successful, the results should be value added to the on-going policy and scientific debates within the agency and stakeholder communities about the future of water resource management.</p>
Rating	excellent

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	<p>The approach is fully documented, described in great detail, and technically feasible. The likelihood of success, given the proponent's expertise in the area of decision making tools and model development (documented in the literature referenced), coupled with experience in issues specific to California water management in both policy and technical matters (demonstrated by past work with NSF and DWR), is high. The scenario generator tool (the applicant proposes using publically available software that can be manipulated to serve the project purpose) proposed captures exisiting data from a range of sources and models and model outputs, including hydrologic scenarios and forcasts in use, upon which constraints are specified and relationships expressed among particular parameters (50-100). It appears that the approach is technically feasible, but there is also an outreach component to the process which is described as engaging in a set of interviews, focus groups, and meetings with stakeholders and managers to test hypothesis and assist investigators in structuring the scenarios. The scale of the project is ambitious, but appears within the grasp of the authors and if successful with bear great value to the broad water mangement community.</p>
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Rating	excellent
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Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The proposal describes the production of a formally reviewed (internally) report, and that portions of this report will be subject to peer-review with the intent of broad dissemination. Presentations at various forums are also planned. Both the report and presentations are likely to be valuable. The proposal does not address data management or collaboration with DWR on data sharing. The scenarios developed as a result of this proposal would be interpreted in the course of stakeholder forums and forums with CALFED managers and agency decision makers.
Rating	very good

Additional Comments

Comments	None
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

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Comments	Yes. The RAND Corporation is an extremely well-regarded institution with a highly qualified staff. RAND has participated in research and policy and technical analysis for 50 years for both the public and private sectors. RAND has a history of working with DWR on water mangement challenges and demonstrates an extensive understanding of California water issues, policy challenges, and expertise in modeling (currently employed by DWR and other more sophisticated tools).
Rating	excellent

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	Yes, the budget breakdown and allocation by task (scoping, scenario development, focus groups, reporting results) seem appropriate for the work proposed.
Rating	very good

Overall

Provide a brief explanation of your summary rating.

Comments	The proposal is very strong both conceptually and technically and if successful, this project could be hugely influential in the way in which water management strategies are developed. By integrating future vulnerabilities and uncertainties and establishing relationships among parameters that allow for a multitude of outcomes the discussion and debate that occurs around water planning and mangement decisions should be enriched. This project could infuse the current debate with new knowledge and information sufficient to propel the discussion from the current hyperpolitical atmosphere to focus more
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	intently on scientific and economic considerations that better communicate tradeoffs and better inform decision makers.
Rating	excellent

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proposal title: A Systematic Approach to Choosing Scenarios to Evaluate Bay–Delta Management and Restoration Strategies

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	Goal, objectives and hypotheses are all clearly stated and internally consistent.
Rating	excellent

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full–scale implementation project justified?

Comments	Study is justified relative to existing knowledge.
Rating	very good

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	Approach appears to be feasible. The biggest problems will be reducing the nearly tens of thousands of computer runs into a limited number of groupings that can be easily presented to decision makers.
Rating	

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	very good
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Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	Yes the Robust Decisionmaking Method is fully documented and technically feasible.
Rating	very good

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	This is modeling exercise to identify possible scenarios for further evaluation. Monitoring does not apply to this project.
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	Products should be valuable to the California Department of Water Resources.
Rating	very good

Additional Comments

Comments	Quite often complex modeling exercises are ignored by management agencies because they did
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	not request the analysis and/or did not really participate in its development of the model. In this case probably the most important element of proposal is the already existing relationship that RAND Corporation has with DRW and the strong letter of support that DRW provided. Without strong support from DRW I would not recommend that the proposal be funded.
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The team the RAND Corporation put together for this effort is very qualified to do the work and appear to have a good track record of accomplishments.
Rating	excellent

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget provided is very detailed and I was not able to identify any major problems with. I am not a modeler so \$549,852 for a modeling exercise does seem like a lot of money, but considering the challenges that the CALFED faces in predicting and regulating water use in Southern California it is probably justified.
Rating	good

Overall

Provide a brief explanation of your summary rating.

Comments	
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	Overall I believe that the proposed study while expensive, does have merit and should be funded especially since it appears to have strong support from the Department of Water Resources
Rating	very good

